

**EPA Superfund
Record of Decision Amendment:**

**NEW HANOVER CNTY AIRPORT BURN PIT
EPA ID: NCD981021157
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WILMINGTON, NC
04/11/2000**

**NEW HANOVER COUNTY AIRPORT BURN PIT
SUPERFUND SITE**

***AMENDED* RECORD OF DECISION
MARCH 2000**



**United States Environmental Protection Agency
Region 4**

AMENDED RECORD OF DECISION

THE DECLARATION

Site Name and Location

New Hanover County Airport Burn Pit
Wilmington, Brunswick County, North Carolina

Statement of Basis and Purpose

This decision describes a fundamental change to the groundwater restoration approach presented in the Record of Decision (ROD) of the New Hanover County Airport Burn Pit Site (the Site). As the result of information developed since the original ROD was finalized, the United States Environmental Protection Agency (USEPA) has decided to choose air sparging as the new Selected Remedy for groundwater. This change to the original Selected Remedy was chosen in accordance with Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan.

EPA has determined that all soil remediation has been completed at the Site. Site-specific data obtained prior to the ROD indicated the aquifer or groundwater plume flowing beneath and down gradient of the Site pose a threat to human health or the environment. Although contaminant levels and risk to human health now appear to be minimal for this site, during a recent study of site conditions it could not be conclusively determined that natural attenuation of contaminants in groundwater is occurring. Therefore, active groundwater remediation options have been reevaluated for this Site to achieve groundwater clean-up goals. Based on a site-specific feasibility study and documents published by the USEPA for sites similar to the Burn Pit Site, air sparging appears to be a remedial treatment alternative which is technically and economically superior to the previously selected pump-and-treat alternative.

The State of North Carolina concurs with this amendment to the ROD (See concurrence letter Appendix A).

Rational For Selection of Air Sparging As Groundwater Restoration Remedy

Air Sparging

Air sparging remediation technology has been implemented with success at sites contaminated with Volatile Organic Compounds (VOCs) and has gained general industry acceptance in the last few years. It is one of the groundwater remedial technologies that the USEPA has proposed for consideration at Superfund Sites because of its potential for providing a faster, more effective and less costly alternative to traditional cleanup methods, such as pump-and-treat.

Even though a pump-and-treat remedy was selected in the September 29, 1992 ROD as the preferred remedy, air sparging technologies offer a number of other advantages over the pump-and-treat approach. These advantages have been documented by the USEPA and include:

- The potential to substantially decrease the time required to achieve remedial goals,
- Readily available equipment and easy installation,
- Requires no extraction, treatment, storage or discharge considerations for groundwater.

Further, metal contaminants are being deleted from the original ROD as Contaminants of Concern (COC). Several sampling investigations using low flow (low turbidity) sampling were completed by the Potential Responsible Parties (PRPs) and the results indicated that metal contaminants were not present above Federal and State standards. Therefore, metals did not require remediation and the air sparging technology was then considered as an available remediation technology.

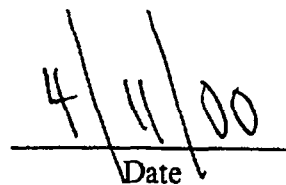
Statutory Determination

Considering the new information that has been developed and the changes that have been made to the Selected Remedy, USEPA believes that the remedy remains protective of human health and the environment and complies with Federal and State requirements that were identified in the September 29, 1992 ROD, as applicable or relevant and appropriate to this remedial action at the time the original ROD was signed. The air sparging remedy satisfies the statutory preference for treatment as a principle element because it restores the shallow aquifer beneath the Site.

Upon completion of this remedy, no hazardous or toxic substances are expected to remain on-site above health based levels that prevent unlimited use and unrestricted exposure. However, it is expected that it may take five years to achieve the clean-up goals. Therefore, a Five Year Review will be conducted within five years of completion of the Preliminary Close-Out Report.



Richard D. Green, Director
Waste Management Division



4/11/00
Date

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Decision Summary

1.0 SITE NAME, LOCATION, AND DESCRIPTION

1.1 Site Location

The New Hanover County Burn Pit Superfund Site is located on Gardner Drive, 500 feet west of the New Hanover County Airport in New Hanover County, approximately 1.5 miles north of Wilmington, North Carolina as shown in Figure 1.

The approximately 1,500 square foot burn pit was located near the center of a four-acre plot (see Figure 2) on the New Hanover County Airport property.

1.2 Affected Population

The closest residential area to the Site is approximately 0.22 miles to the west of the Site. This area is separated from the Site by a road, railroad tracks, and a wooded area. The plume of volatile organic compounds (VOCs) does not affect off-site residential or industrial populations since the known plume does not extend more than 350 feet from the location of the original burn pit.

1.3 Land Use

Land use in the vicinity is commercial, light industrial, and residential. There are rental car maintenance facilities, a closed sawmill/lumberyard, and a trucking company to the east and northeast of the Site. The closest residential areas to the Site are approximately 0.22 miles to the west of the Site. This area is separated from the Site by a road, railroad tracks, and a wooded area.

The land immediately northeast, north, west, and south of the Site is forested with mixed southern hardwoods typical of the coastal plain area. This wooded area extends for approximately 300 to 500 feet west and north and 800 feet south of the Site.

1.4 Natural Resources

The groundwater under the Site is designated as Class GA in accordance with North Carolina's groundwater classification system and Class IIB under USEPA Groundwater Classification Guidelines (December 1986). The Class GA classification means that the groundwater is an existing or potential source of drinking water supply for humans as defined in

Title 15A, North Carolina Administrative Code, Subchapter 2L (T15A NCAC 2L). EPA classifies the upper zone of the aquifer (i.e., the groundwater above of the blue clay layer) as Class IIB since the aquifer is of drinking quality but is not currently being used as a source of drinking water. The groundwater beneath the blue clay layer is assumed to be interconnected with the Castle Hayne Limestone formation and is therefore, classified as IIA. Class IIA is defined as an aquifer that is currently being used as a drinking water source. For these reasons, the groundwater needs to be remediated to a level protective of public health and the environment as specified in federal and state regulations governing the quality and use of drinking water. Both the Pee Dee and the Castle Hayne are major drinking water sources for New Hanover County.

1.5 Site Operational History

The New Hanover County Airport Burn Pit was constructed by the County of New Hanover in 1968. From 1968 to 1979, the Cape Fear Technical Institute (now known as the Cape Fear Community College), used the burn pit for fire-training purposes, burning jet fuel and gasoline in the burn pit, and extinguishing the fires with water. The Wilmington Fire Department used the burn pit for fire-training purposes from 1968 to 1976 and the United States Air Force used the burn pit for fire-training purposes during the Vietnam War.

Jet fuel and drainage from petroleum fuel storage tanks in the area were burned, and the fires were extinguished with water, carbon dioxide, and dry chemicals. Some time prior to 1982, materials used in river spill cleanups were dumped into the burn pit.

In 1986, the North Carolina Division of Health Services discovered heavy metals and numerous organics in the soil around the burn pit and in other nearby soil samples. Surface water within three (3) miles downstream of the Site is used for recreational activities, and an estuary wetland is located approximately one (1) mile from the Site. Approximately 6,300 people obtain drinking water from public and private wells within three (3) miles of the Site. A private well is located approximately 1,500 feet to the northwest of the Site.

To date, EPA has identified four (4) potentially responsible parties (PRPs) at the Site: the County of New Hanover, North Carolina; the City of Wilmington, North Carolina; the Cape Fear Community College; and the United States Air Force.

The Site was listed on the National Priorities List on March 31, 1989. EPA negotiated with the three (3) municipal PRPs in March 1989, for performance of the remedial investigation/feasibility study (RI/FS), but the parties were unable to reach an agreement. In May 1990, however, the parties signed an Administrative Order on Consent for a removal action. During the removal, the PRPs removed all of the source material present at the Site at a cost of \$452,500.00.

EPA conducted a fund-lead RI/FS in 1991 and 1992, and issued a Record of Decision (ROD) for the Site on September 29, 1992. The ROD contemplated pump-and-treat of the groundwater to address low levels of benzene, ethyl benzene, lead, and chromium at an estimated present worth cost of \$1.5 million.

As part of the selected remedy, the ROD included a technical impracticability provision and provided for an additional year of groundwater sampling for EPA to determine whether or not natural attenuation was occurring in the groundwater. After six (6) rounds of sampling conducted by EPA's Ecological Science Division, there was no evidence that natural attenuation was occurring with any of the contaminants currently present in the groundwater.

1.6 Highlights of Community Participation

In accordance with CERCLA, Section 117 and the National Contingency Plan (NCP) 300.435(c)(2)(ii) a revised proposed plan was mailed to interested parties and other persons who have requested to be included on USEPA's mailing list for the Site. The proposed plan supporting information was made available to the public in the information repository maintained at the EPA Docket Room in Atlanta and at the New Hanover Public Library located at 210 Chestnut Street, Wilmington, North Carolina. Notice of availability of these documents were published in *Wilmington Morning Star* on November 1, 1999.

The USEPA conducted a public meeting on November 30, 1999. A comment period of sixty days was provided to receive written or oral comments from the public from November 16, 1999 to January 15, 2000. At the public meeting, many residents were concerned about their drinking water and surface water run-off. The citizens requested the USEPA to sample their wells and to determine if run-off from the Site and the contamination in the groundwater from the Site had impacted their well water. Based on these concerns, the USEPA's Environmental Services Division sampled the wells in the vicinity of the Site during the week of January 17, 2000. Results of this sampling event are expected in April 2000.

In response to comments at the public meeting, the NCDENR Superfund Section, county officials and their consultants, and NCDENR Surface Water Quality personnel, completed reconnaissance of the on-site and adjacent surface water pathways on January 13, 2000. On January 21, 2000, NCDENR Surface Water Quality, Wilmington Regional Office, completed surface water sampling in the areas agreed to by the North Carolina Superfund Section and the Potentially Responsible Parties (PRPs) during the reconnaissance on January 13, 2000.

NCDENR Surface Water Quality collected another set of surface water samples on February 3, 2000. A NCDENR Superfund Section representative and three residents from the area were present during all or part of the surface water sampling event and observed sampling locations and procedures. One of the four surface water samples collected on February 3, 2000

was at a different location than the 13 January sampling event. This change was made due to recommendations from the local residents. The preliminary results from both sampling events indicate no detection of any COCs or VOCs.

Only one written comment was received during the 60 day public comment period. A letter was submitted by residents requesting another thirty days extension pending test results on the sampling investigation. Since the preliminary results from the surface water samples indicated no detection of any COCs or VOCs, and since any additional private well sampling results would not impact treatment decisions at the burn pit, the USEPA felt that it was necessary to continue the remedial schedule as planned to implement the proposed remedy.

2.0 REASONS FOR ISSUING THE ROD AMENDMENT

2.1 Description of the Original Selected Remedy

The groundwater remediation alternative originally selected for the New Hanover Site is Alternative GW#3 - Groundwater Extraction and Physical Treatment (Air Stripping) with Discharge to Publicly Owned Treatment Waterworks (POTW). A description of the original selected remedial alternative follows.

The selected ROD remedy was pump and treat and was chosen because it was the most effective remedy that could treat all the contaminants of concern (COC) at the site including metals. In Table 1 of the September 1992 ROD, the COCs were determined to include Benzene, Chloroform, 1,2,-Dichloroethane, Ethylbenzene, Chromium and Lead. The selected pump and treat remedy was estimated at a present worth cost of \$1.93 million.

The contaminated aquifer would have been remediated until the performance standards specified in Table 1 are achieved. Figure 2 delineates the estimated periphery of the plume emanating from the burn pit area of the New Hanover Site. Following treatment of the extracted groundwater, the groundwater would have been discharged into a sewer connection to the Northside POTW which is owned and operated by the City of Wilmington. A sewer line exists along the perimeter roads to the New Hanover County Airport.

Three (3) extracting wells, each pumping at a rate of five (5) gpm would have been necessary to achieve and maintain a sufficient drawdown in the underlying aquifer to contain and remove the plume of contamination. The extraction wells would have been located within and near the periphery of the plume. The extracted groundwater would have been treated in an above-ground, on-site air stripper. An optional pretreatment step was planned to remove TSS and iron to prevent fouling of the air stripper. The necessity of a pretreatment step as well as the number, placement, and pumping rate of the extraction wells was to be determined in the Remedial Design. The air stripper was to be designed to achieve a less than 1 ug/l level of benzene in the effluent, which was a pretreatment requirement specified by the Publicly Owned Treatment Waterwork (POTW).

2.2 Rationale for Changing the Selected Remedy

From the beginning of negotiations, the PRPs raised their concern over the groundwater pump-and-treat selected remedy in the ROD because it was driven by the State of North Carolina's stringent cleanup level for benzene (1ppb). The PRPs requested that EPA consider less expensive options, or in the alternative, a waiver of the groundwater cleanup standards.

Upon failure to negotiate a Consent Decree, the EPA issued a Unilateral Administrative Order (UAO) on February 28, 1994, for performance of the remedial design and remedial action at the site. The PRPs agreed to do the work on March 21, 1994 and selected their contractor to prepare the Remedial Design of the groundwater treatment system. The contractor conducted additional field activities installing monitoring wells in September and October 1994, in support of obtaining more data to aid in development of the Remedial Design (RD).

The RD required submittal of the Remedial Design Work Plan. On May 17, 1994, the PRPs submitted the Remedial Design Work Plan (RDWP) which provided a detailed scope of work and technical approach for completion of the RD set forth in the ROD, as well as a schedule for RD completion. As required in the RDWP, a Preliminary Remedial Design report representing a 30% submittal was submitted to EPA on December 15, 1994. EPA approved the 30% submittal on February 1995.

In accordance with the UAO, the PRPs submitted the Intermediate Design (60% submittal) Report to EPA on June 1, 1995. The Intermediate Design Report did not address the remedy as outlined in the ROD. Instead, the 60 % Design submittal recommended Air Sparging as the preferred remedy. Since the original ROD included metals contamination (inorganic chromium and lead) as Contaminants of Concern (COCs) Air Sparging was not an appropriate remedy.

After conferencing with the PRP's representative in the summer of 1996, low flow (low turbidity) sampling of select monitoring wells was completed at the Site in the Fall of 1996 and the results indicated no occurrence of metals was associated with the preservative leaching of trace metals from high concentrations of solids found in previous sampling.

Since metals contamination was determined by field testing of the source area groundwater to no longer be COCs, the PRPs requested permission to conduct a study to evaluate current groundwater remediation technologies and their potential applicability to the Burn Pit Site.

The remedial technology considered best for treating the Site related volatile organic compounds (VOCs) is Air Sparging. In order to verify its effectiveness at the Burn Pit Site, an Air Sparging Treatability Study was conducted in 1998 and the results are documented in the Air Sparging Pilot Test Treatability Study Report dated December 16, 1998. The Air Sparging Treatability Study results showed air sparging to be very effective at treating the VOCs present in

the groundwater at the Site. A Feasibility Study Amendment (FSA) was then conducted to document the comparison of alternatives in the original ROD with the proposed air sparging remedy.

After signing of the ROD, the PRPs requested permission to conduct a study to determine whether conditions at the Site satisfy the newly established requirement set forth by the North Carolina Department of Environment and Natural Resources for submittal of a Corrective Action Plan (CAP) which uses Natural Attenuation or Intrinsic Bioremediation as the proposed remediation approach. The CAP would be based on the T15A NCAC:02L.0106(1) rule. Also, the PRPs requested permission to conduct a study to evaluate current groundwater remediation technologies and their potential applicability to the Burn Pit Site.

After completing this study, the PRPs concluded that groundwater sampling/laboratory analysis did not indicate a net reduction of contaminant concentration levels over the three and one-half year period of record. Therefore, the PRPs felt that it could not be conclusively determined without additional data and analysis that a remediation/attenuation based CAP would be effective under current NCDENR guidelines.

Since metals contamination was no longer of concern, air sparging technology was then considered the preferred remedy. Therefore, based on the results of the studies noted above and guidance published by EPA, and other consultants experience with similar sites, Air Sparging is considered to be a more effective and less costly alternative for groundwater remediation at the Site. Cost associated with implementation of an air sparging system for the Burn Pit Site was estimated to be approximately \$245,000.00.

Pump and Treat

The selected ROD remedy was pump and treat and was chosen because it was the most effective remedy that could treat all the contaminants of concern at the site including metals. Following the ROD, the PRPs have submitted documentation to verify that there is no occurrence of metals above Federal or State standards. Therefore, metals contamination is no longer considered a contaminant of concern. The ROD for the Site requires 9.7 million gallons of groundwater to be extracted, treated above ground and discharged to the City of Wilmington's Northside POTW for a period of 4.5 years. Because of the USEPA's experience with the pump-and-treat approach, it is believed that a system period of operation of 4.5 years (based upon an extracted volume of groundwater of 9.7 million gallons) may not be realistic.

Although the pump-and-treat approach to groundwater remediation has been implemented at a variety of contaminated Sites over the past several years, it has become apparent through a site specific treatability study and other documentation, that air sparging has the potential for a faster and more efficient cleanup at Sites with low concentrations of VOCs. The USEPA has confirmed that although pump-and-treat is the most commonly used technology for remediating contaminated groundwaters, contamination reduction stops long before reaching remediation levels (cleanup standards).

The primary reason this occurs is that chemicals have an affinity to bind to organic and inorganic matter present in the soils of the aquifer. Chemicals also have a solubility limit in groundwater that causes them to release from soil particles in the aquifer to the groundwater at a rate much less than the extraction rate of the pump and treat system. Therefore, in many cases where contaminant concentrations are near the solubility limit, pump and treat remedies are long term containment remedies that take many years to reach performance standards. Hence at some sites, such as this one, the slow rate of contaminant removal and the relative costs associated with this type of traditional remedy are unwarranted or unnecessary.

Therefore, the USEPA and the State have worked with the PRPs and their contractor to change the remedy to Air Sparging as an alternative remedy that is a more effective and less costly groundwater remediation alternative.

3.0 DESCRIPTION OF NEW ALTERNATIVES

Based upon consideration of the requirements of CERCLA, the NCP, and the detailed analysis of alternatives, EPA reviewed a total of five groundwater restoration options for this ROD amendment to evaluate the feasibility of this option in light of new information that has been obtained since the original ROD was finalized. The alternatives were evaluated and compared to the nine criteria, as required by the NCP. This analysis of alternatives is documented in the Amended Feasibility Study dated June 24, 1999. A summary is provided below.

Alternative 1 involved containing the groundwater plume with a slurry wall. Alternatives 2-4 are variations of the original remedy, which stated that pump-and-treat would be utilized to restore groundwater to levels protective of human health. Alternative 2 involved a treatment by which the extracted groundwater would have consisted of chromium reduction, metals precipitation using sodium hydroxide, flocculation, clarification and filtration; and air stripping to meet State requirements for ultimate groundwater discharge via on-site spray irrigation. Alternatives 3 and 4 involved the installation of a groundwater extraction system to remove 9.7 million gallons of contaminated groundwater, chromium reduction and metal precipitation, and discharge of the treated groundwater to Smith Creek or POTW. EPA Region 4 has selected Alternative 5 (of the focused feasibility study) as its preferred remedy which is estimated at \$245,000 in present worth cost over 4.5 years. This response action will address the contaminated groundwater by volatilizing and degrading benzene and other volatile organic compounds from the contaminated groundwater.

Alternative GW1: Vertical Barrier/Cap

This alternative involves containing the groundwater plume with a vertical barrier (i.e., slurry wall) and the construction of an impermeable cap to prevent precipitation from causing groundwater mounding within the area encompassed by the vertical barrier. The vertical barrier would be accomplished by employing a slurry wall to a depth of approximately 30 feet. The slurry wall would be anchored in the 5 foot blue clay layer encountered under the Site. Restrictions on future land use would be warranted.

Periodic sampling of the groundwater would take place in order to monitor changes in both contaminant concentrations as well as defining the migration of the plume. The need for additional monitoring of groundwater and the frequency of the monitoring would be resolved in the Remedial Design (RD).

The capital costs include the installation of the slurry wall and the construction of the cap. Operation & Maintenance (O&M) costs would include maintenance of the cap, periodic groundwater sampling, and the costs for conducting the 5 year reviews as required by Section 212(c) of CERCLA.

Capital Costs:	\$ 925,900
PW O&M Costs:	<u>\$ 161,800</u>
Total PW Costs:	\$ 1,087,700

Time to Implement:	6 months for design and contractor selection/ 8 months to construct
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Estimated Period of Operation:	30 years
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Alternative GW2: Groundwater Extraction and Physical/Chemical Treatment (Chromium Reduction, Metals Precipitation, and Air Stripping) with Discharge via Spray Irrigation

This alternative involved the installation of a groundwater extraction system to remove the 9.7 million gallons of contaminated groundwater, chromium reduction, metals precipitation, VOC removal using air stripping, and on-site discharge by spray irrigation. Groundwater would be extracted from within the plume. The point of compliance for this alternative is the extent the plume has traveled in the aquifer where levels of contaminants are above the cleanup goals.

The treatment train for the extracted groundwater would consist of chromium reduction; metals precipitation using sodium hydroxide, flocculation, clarification, and filtration; and air stripping to meet State requirements for ultimate groundwater discharge via on-site spray irrigation.

The settled sludge from the metals removal step would be pumped to a filter press. The sludge recovered from the dewatering operation would be recycled or analyzed and disposed offsite at a hazardous or solid waste landfill. Following the air stripper, the treated groundwater would then be pumped to the on-site spray irrigation system. Operation of the extraction system during wet weather or freezing temperature conditions requires provisions for sufficient storage of treated groundwater.

Capital Costs:	\$ 1,053,900
PW O&M Costs:	<u>\$ 1,265,200</u>
Total PW Costs:	\$ 2,319,100

Time to Implement:	6 months to design and select contractor/ 8 months to construct
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Estimated Period of Operation:	4.5 years
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Alternative GW3: Groundwater Extraction and Physical/Chemical Treatment (Chromium Reduction and Metals Precipitation) with Discharge to Surface Water

This alternative involves the installation of a groundwater extraction system to remove the 9.7 million gallons of contaminated groundwater, chromium reduction and metals precipitation, and discharge of the treated groundwater to Smith Creek located approximately 4,000 feet south of the Site. The groundwater extraction system would be identical to that described in Alternative 2. Following the removal of the metals, the treated groundwater would be piped and discharged into Smith Creek via an NPDES permit. The point of compliance is the same as specified in Alternative 2.

Capital Costs:	\$ 1,132,500
PW O&M Costs:	<u>\$ 1,194,500</u>
Total PW Costs:	\$ 2,327,000

Time to Implement:	6 months for design and contractor selection
Estimated Period of Operations:	5 years

Alternative GW4: Groundwater Extraction and Physical Treatment (Air Stripping) with Discharge to POTW

This alternative was selected because it was the most effective remedy that could treat all the contaminants of concern at the Site including metals. The remedy consist of the installation of a groundwater extraction system to remove the 9.7 million gallons of contaminated groundwater, an air stripping step to remove the VOCs, and discharging the treated groundwater to the Northside POTW which is owned and operated by the City of Wilmington. Groundwater would be extracted from within the plume and pumped to an on-site treatment system. It was anticipated that this groundwater treatment system would achieve cleanup goals to meet the “below detection limit” for benzene (i.e., 1.0 ug/l) requirement for discharge to the POTW. Treated groundwater would flow from the air stripper to a sewer connection to the POTW. The point of compliance for this alternatives was the extent the plume traveled in the aquifer.

Capital Costs:	\$ 859,100
PW O&M Costs:	<u>\$ 1,073,700</u>
Total PW Costs:	\$ 1,932,800

Time to Implement:	6 months for design and contractor selection/2 months to construct
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Estimated Period of Operations:	4.5 years
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Alternative GW5: Insitu Groundwater Air Sparging

This alternative includes insitu groundwater air sparging and ongoing monitoring of groundwater contaminant levels which was documented in the Amended Feasibility Study dated June 24, 1999. A Treatability Study of this system was conducted between late 1997 through December 1998. The results of the study established that air sparging effectively reduced contaminant concentrations in the groundwater at the Site, to concentrations below the detection limit in many of the observation wells at the study area (See Figure 2).

This type of treatment concept has been implemented with major success at sites contaminated with VOCs and has gained general industry acceptance in the years since the Feasibility Study was submitted. Air is injected into the aquifer below the deepest known portion of contamination through a strategically located network of vertically or horizontally installed air sparging wells. The injected air diffuses through the groundwater thereby volatilizing and enhancing degradation of the VOC contaminants dissolved in the groundwater. The contaminants are then in vapor form and move into any cracks or breaks in the subsurface and are eventually vented into the atmosphere. The Pilot Test Treatability Study at the Site consisted of installing a sparge well in the primary source area of the plume. Air was forced into the aquifer through the sparge well that effectively volatilized and degraded the VOC contaminants. Air Sparging is most efficient in the immediate area around the sparge well and efficiency decreases with increased distance from the sparge well. The Treatability Study resulted in 100% reduction of all VOC compounds within a radius of 12.8 feet from the sparge well to approximately 50% reduction at a radius of 21.5 feet.

Capital Costs: \$245,000.00

Time to Implement: 3 to 5 years

4.0 COMPARATIVE ANALYSIS OF NEW ALTERNATIVE REMEDIES

USEPA Region 4 has reconsidered the Selected Remedy presented in the September 1992 ROD. This section profiles Alternative 5, which the Agency is now selecting, after comparing it to the other alternatives that were evaluated, using the nine criteria as specified in the NCP.

Evaluation

4.1 Overall Protectiveness

The greatest reduction in the potential risk of groundwater ingestion and inhalation would be achieved since all contaminated groundwater would be treated insitu to levels established by the Record of Decision Amendment.

4.2 Compliance with ARARS

Groundwater contaminant concentrations would meet the established cleanup goals for the New Hanover County Airport Burn Pit Site.

4.3 Long-Term Effectiveness and Permanence

The potential of off-site contaminant migration via groundwater would be eliminated permanently. The groundwater treatment system would require performance specifications to ensure the adequate operation of the system. Long-term public health risks associated with groundwater ingestion and inhalation would be eliminated. It is expected that no future site use restrictions would be required once groundwater treatment is completed (See Table 2).

4.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

Insitu treatment of contaminated groundwater would achieve a maximum and permanent reduction of contaminant mobility, toxicity, and volume in the groundwater.

4.5 Short-Term Effectiveness

Small-scale construction activities during installation of sparging wells and during air stripping operation may result in the release of minimal volatilized contaminants, and the operation of drilling equipment would produce additional noise. Therefore, health and safety requirements while implementing this alternative would include periodic monitoring of organic vapors and the use of personal protection equipment by all personnel at the Site. Equipment and personnel decontamination facilities would also be necessary.

4.6 Implementability

Preliminary Schedule

Approximately six to nine months would be required for design and review. Assuming no major delays, this alternative could be implemented in approximately one to two years. Insitu groundwater air sparging remediation would require approximately three to five years.

4.7 State Acceptance

The State of North Carolina concurs with this amendment to the 1992 ROD (see Appendix A).

4.8 Community Acceptance

There were no major objections to the proposed remedy during the public comment period. The USEPA received a letter from residents in the area requesting another thirty days extension

pending test results on the sampling investigation. The USEPA felt that it was necessary to continue the remedial schedule as planned to implement the proposed remedy.

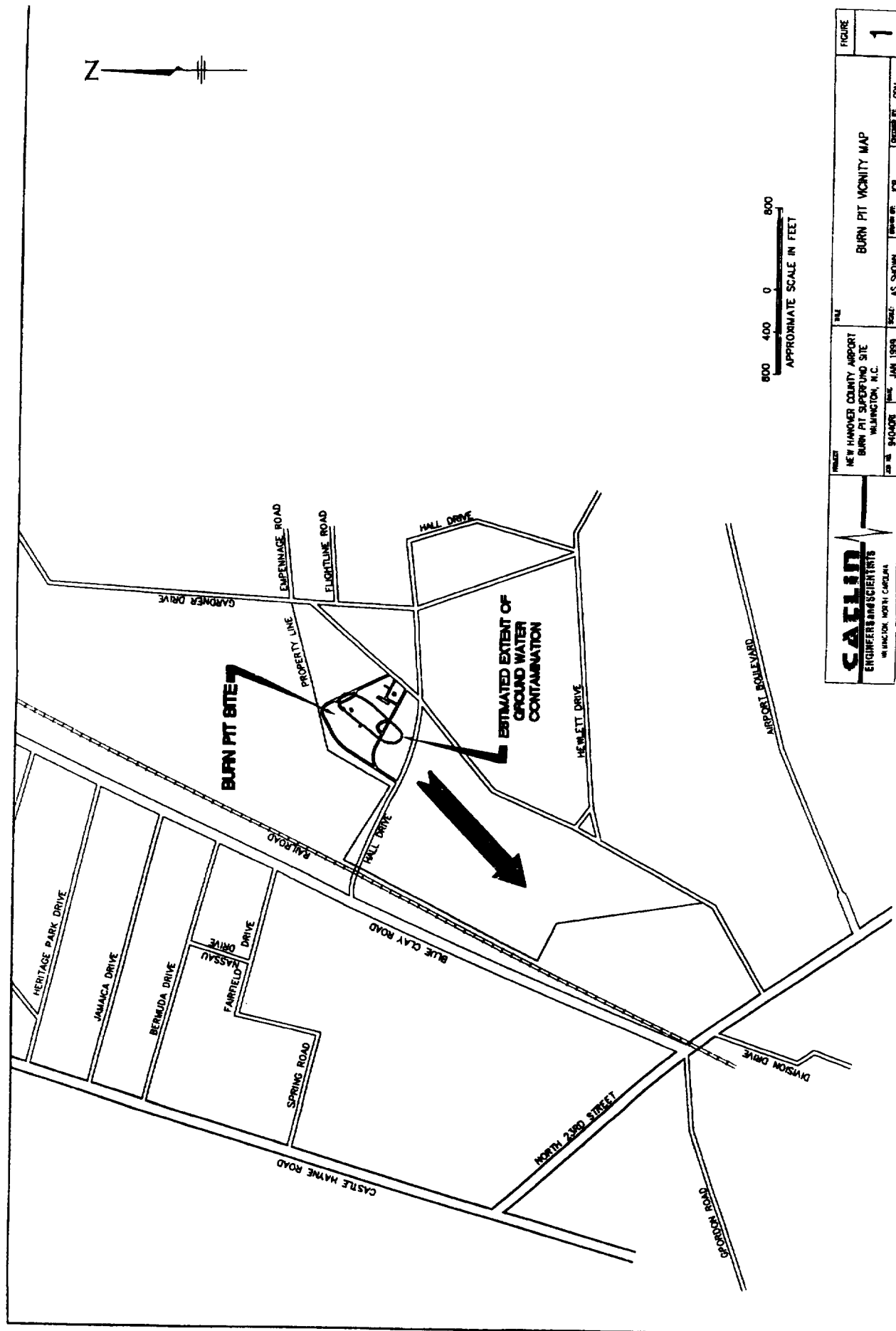
4.9 Cost

A comparison of present worth cost associated with the groundwater alternative indicates that Alternative 5 is the least expensive \$245,000 (see Appendix B).

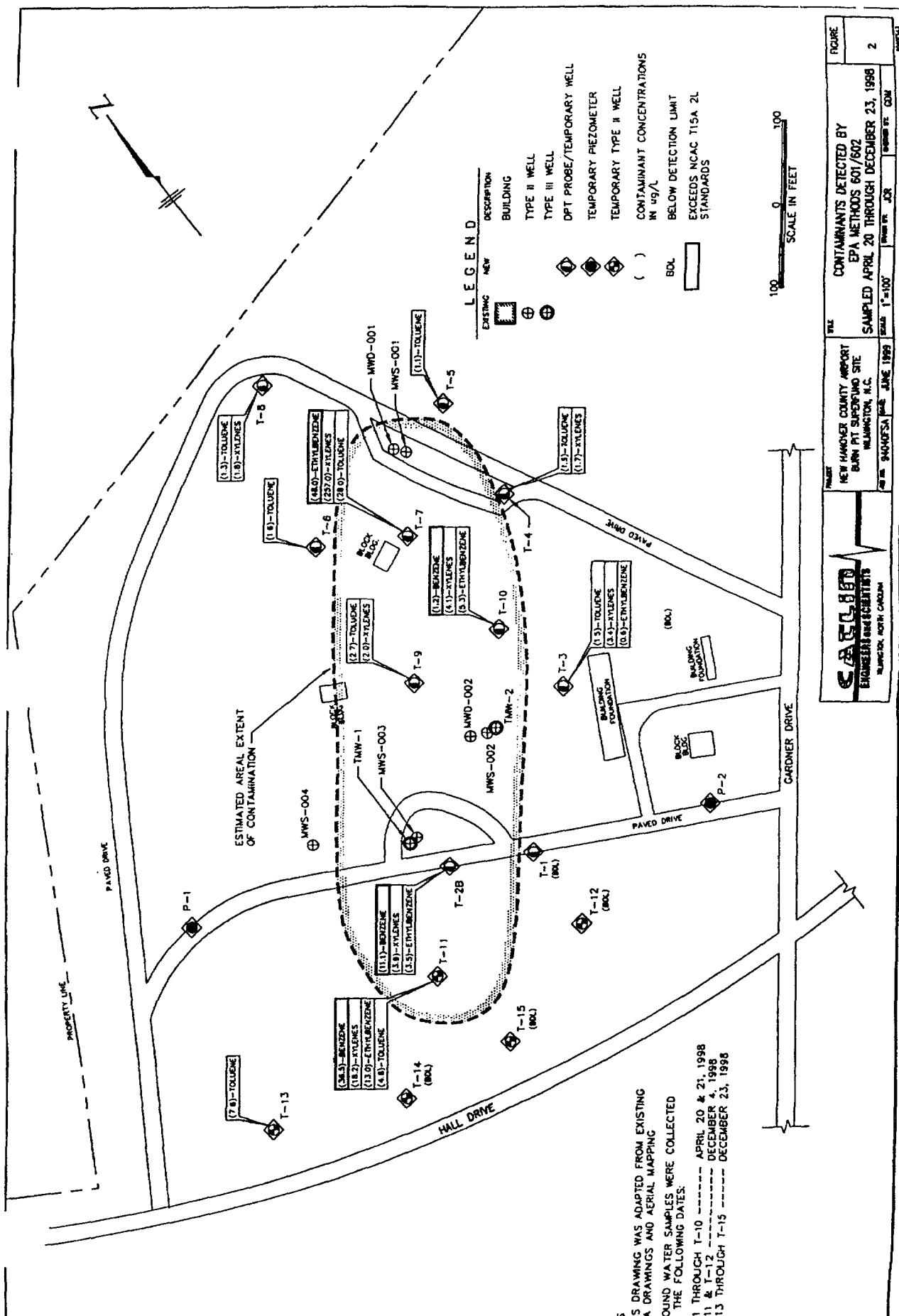
5.0 STATUTORY DETERMINATIONS

Under its legal authorities, EPA's primary responsibility at Superfund sites is to select remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA established several other statutory requirements and preferences. These specify that when complete, the selected remedial action for a Site must comply with applicable or relevant and appropriate environmental standards established under Federal and State environmental laws unless a statutory waiver is granted. The selected remedy must also be cost-effective and utilize permanent treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes.

Considering the new information now available and the changes made to the selected remedy by this ROD amendment, USEPA believes that the air sparging remedy will be protective of human health and the environment and complies with federal and state requirements that were identified in the September 1992 ROD as applicable or relevant and appropriate to this remedial action. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site.



 CALLIN ENGINEERS AND SCIENTISTS WILMINGTON, NORTH CAROLINA	PROJECT NEW HANOVER COUNTY AIRPORT BURN PIT SUPERFUND SITE WILMINGTON, N.C.	DATE JAN 1999	SCALE AS SHOWN	DRAWN BY JCR	CHECKED BY GJM
	TITLE BURN PIT VICINITY MAP				
FIGURE 1					



THIS DRAWING WAS ADAPTED FROM EXISTING
A DRAWINGS AND AERIAL MAPPING
GROUND WATER SAMPLES WERE COLLECTED
THE FOLLOWING DATES:

1	1 THROUGH 7-10	-----	APRIL 20 & 21, 1998
11	11 & 12	-----	DECEMBER 4, 1998
13	THROUGH 7-15	-----	DECEMBER 23, 1998

Table 1

GROUNDWATER REMEDIATION LEVELS		
Contaminants	Maximum Concentration Detected (ppb)	Remediation Level (ppb)
VOLATILE ORGANICS		
Benzene	220	1
Chloroform	3.4	.19
1,2-Dichloroethane	4.4	.38
Ethylbenzene	120	.29
INORGANICS		
Chromium	82	50
Lead	22	15

TABLE 2

SUMMARY OF INSTITUTIONAL AND LAND USE RESTRICTIONS NEW HANOVER COUNTY AIRPORT BURN PIT SITE WILMINGTON, NORTH CAROLINA					
	Activities				
Remedial Activities	Fencing⁽¹⁾	Restictions	Land Use	Development	Groundwater Use
6: Air Sparging	No	No	No	No	No

Notes:

⁽¹⁾ Fencing restrictions apply to the period of remediation only (except for no action). Since Air Sparging is an insitu technology, no fencing requirements are required.

Yes = Restrictions apply.

No = No restrictions after remediation assuming ARARs and cleanup goals are met.

APPENDIX A

State of North Carolina Concurrence Letter



NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES

DIVISION OF WASTE MANAGEMENT

March 30, 2000

JAMES B. HUNT JR.
GOVERNOR

Ms. Beverly Hudson
North Superfund Remedial Branch
US EPA Region IV
61 Forsyth Street, Eleventh (11) Floor
Atlanta, Georgia 30303

BILL HOLMAN
SECRETARY

WILLIAM L. MEYER
DIRECTOR

RE: State Concurrence with the Amendment to the Record of Decision
Groundwater Remediation
New Hanover County Airport Burn Pit
NCD 981 021 157
Wilmington, New Hanover County, NC

Dear Ms. Hudson:

The State of North Carolina has reviewed the Amendment to the Record of Decision (ROD) for the Ground Water Remediation of the New Hanover County Airport Burn Pit, dated 30 March 2000. We concur with the selected remedy, subject to the following conditions.

1. Since remediation of the soil at the subject Site was completed in 1989 and the groundwater is expected to meet State and federal cleanup levels within three to five years, the State does not foresee long-term groundwater contamination that would prevent unrestricted use of the property. Therefore, the State does not require deed recordation or restrictions in accordance with NCGS 130A-310.8, *Recordation of inactive hazardous substances or waste disposal sites*.
2. State concurrence with this Amended Record of Decision (ROD) and the newly selected remedy for the Site is based solely on the information contained in the Amended ROD. Should the state receive new or additional information which significantly affects the conclusions or remedy selection contained in the Amended ROD, it may modify or withdraw this concurrence by giving written notice to USEPA Region IV.
3. State concurrence on this Amended Record of Decision (ROD) in no way binds the State to concur in future decisions or commits the State to participate, financially or otherwise, in the clean up of the site. The State reserves the right to review, overview, comment, and make independent assessment of all future work relating to this site.

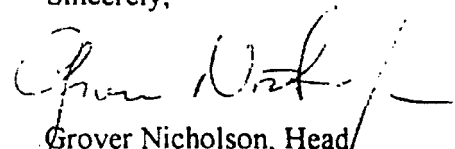


Ms. Beverly Hudson
30 March 2000
Page 2

4. Although residual contamination is not expected to remain in groundwater after remediation is complete, if the total residual risk level to human health exceeds 10^{-6} , the State may require deed recordation/restriction to document the presence of residual contamination and possibly limit future use of the property as specified in NCGS 130A-310.8.

The state of North Carolina appreciates the opportunity to help amend the Record of Decision (ROD) for the subject site, and we look forward to working with the EPA on the final remedy. If you have any questions or comments, please give me a call at, (919) 733-2801, extension 291.

Sincerely,



Grover Nicholson, Head
Federal Remediation Branch
NC Superfund Section

cc: Phil Vorsatz, Chief, North Superfund Remedial Branch
Jack Butler, Chief, NC Superfund Section
Randy McElveen, NC Superfund Section

APPENDIX B

Summary of Cost Estimates for Evaluated Alternatives

**COST ESTIMATE OF AIR SPARGING BASED CORRECTIVE ACTION FOR
NEW HANOVER COUNTY AIRPORT BURNPIT SUPERFUND SITE**

DESCRIPTION	COST (dollars)
Remedial Design	70,000
Equipment costs for remedial action	60,000
Installation of Equipment	11,500
Annual operating costs to include sampling and analysis	
Turn key operation by contractor or designated subcontractor	20,000/yr x 5 years = 100,000
Total Present Worth Cost	\$24,500